CLAIMS

What is claimed is:

1. A method for generating a predictor of failure of a manufacturing process, comprising the steps of:

generating a candidate solution for the predictor;

determining a fitness of the candidate solution using a fitness case pertaining to the manufacturing process wherein the fitness case includes data obtained at a process step associated with the predictor and data obtained from at least one other process step.

2. The method of claim 1, wherein the step of determining a fitness includes the step of determining a fitness of the candidate solution using a fitness case pertaining to the manufacturing process and a set of costs associated with the manufacturing process.

3. The method of claim 2, wherein the step of determining a fitness of the candidate solution includes the steps of:

obtaining a prediction from the candidate solution in response to the fitness case;

comparing the prediction to an actual result associated with the fitness case;

reinforcing the fitness of the candidate solution using the costs if the prediction corresponds to the actual result;

reinforcing the fitness of the candidate solution using the costs if the prediction does not correspond to the actual result.

4. The method of claim 3, wherein the steps of reinforcing comprise the step of adjusting the fitness using a cost of running a sub-portion of a product to an end of line of the manufacturing process.

5. The method of claim 3, wherein the steps of reinforcing comprise the step of adjusting the fitness using an expected revenue from a sale of a product.

6. The method of claim 3, wherein the steps of reinforcing comprise the step of adjusting the fitness using a cost of manufacturing a replacement sub-part of a product produced by the manufacturing process.

7. The method of claim 3, further comprising the step of selecting the candidate solution as a parent for a next generation of candidate solutions in response to the fitness.

8. A manufacturing system, comprising:

a set of process steps including a process step that yields a sub-assembly for a product;

predictor that predicts an eventual failure of the product in response to a set of process data obtained at the process step that yields the sub-assembly and a set of process data obtained at one or

more of the other process steps that yielded the sub-assembly.

9. The manufacturing system of claim 8, wherein the predictor is generated by evolving the predictor, the step of evolving including the steps of generating a candidate solution for the predictor and determining a fitness of the candidate solution using a fitness case and a set of costs associated with the manufacturing system.

10. The manufacturing system of claim 8, wherein the step of determining a fitness of the candidate solution includes the steps of:

obtaining a prediction from the candidate solution in response to the fitness case;

comparing the prediction to an actual result associated with the fitness case;

reinforcing the fitness of the candidate solution using the costs if the prediction corresponds to the actual result;

reinforcing the fitness of the candidate solution using the costs if the prediction does not correspond to the actual result.

11. The manufacturing system of claim 8, wherein the sub-assembly is discarded if the likelihood of failure exceeds a threshold value.

12. The manufacturing system of claim 8, wherein the sub-assembly is not discarded if the likelihood of failure exceeds a threshold value such that the

process data for the sub-assembly is used as an additional fitness case to re-evolve the predictor.

13. A method for manufacturing a product, comprising the steps of:

performing a set of process steps including a process step that yields a sub-assembly for the product;

predicting an eventual failure of the product in response to a set of process data obtained at the process step that yields the sub-assembly and a set of process data obtained at one or more of the other process steps that yielded the sub-assembly.

14. The method of claim 13, wherein the step of predicting includes the steps of generating a candidate solution for a predictor of the likelihood and determining a fitness of the candidate solution using a fitness case and a set of manufacturing costs.

15. The method of claim 14, wherein the step of determining a fitness of the candidate solution includes the steps of:

obtaining a prediction from the candidate solution in response to the fitness case;

comparing the prediction to an actual result associated with the fitness case;

reinforcing the fitness of the candidate solution using the costs if the prediction corresponds to the actual result;

reinforcing the fitness of the candidate solution using the costs if the prediction does not correspond to the actual result.

16. The method of claim 15, further comprising the step of discarding the sub-assembly if the likelihood of failure exceeds a threshold value.

17. The method of claim 15, further comprising the steps of running the sub-assembly to an end of line of the process steps if the likelihood of failure exceeds a threshold value and re-evolving a predictor of the likelihood using the process data for the sub-assembly as an additional fitness case.